The invention claimed is:

1. A method for stabilizing an RNA molecule against degradation comprising:
   a) applying a solution to a separation medium having a non-polar separation surface in the presence of a counterion agent, wherein the solution comprises the RNA molecule and an agent capable of catalyzing the degradation of RNA;
   b) eluting the RNA molecule from the separation medium by passing through the separation medium a mobile phase containing a concentration of organic solvent sufficient to elute the RNA molecule from the separation medium, where the elution is conducted under conditions that result in a substantial separation of the RNA molecule from the agent capable of catalyzing the degradation of RNA; and
   c) collecting an eluant fraction containing the RNA molecule that is substantially free of the agent capable of catalyzing the degradation of RNA.
2. The method of Claim 1 wherein the agent capable of catalyzing the degradation of RNA is an enzyme.
3. The method of Claim 2 wherein the nuclease is an RNase.
4. The method of Claim 1 wherein a plurality of RNA molecules is stabilized.
5. The method of Claim 1 wherein the RNA molecule is separated from the agent capable of catalyzing RNA degradation by MIPC.
6. The method of Claim 1 wherein the RNA molecule is separated from the agent capable of catalyzing RNA degradation in a batch process.
7. The method of Claim 1 wherein the RNA molecule is separated from the agent capable of catalyzing RNA degradation under conditions wherein the secondary structure of the RNA molecule is substantially denatured.

8. The method of Claim 7 wherein the RNA molecule is separated from the agent capable of catalyzing RNA degradation at a temperature of about 50°C or greater.

9. The method of Claim 8 wherein the RNA molecule is separated from the agent capable of catalyzing RNA degradation at a temperature of about 70°C or greater.

10. The method of Claim 7 wherein the mRNA molecule is substantially denatured by means of a chemical reagent.

11. The method of Claim 1 wherein the separation is conducted under conditions that are substantially free of multivalent cations capable of interfering with polynucleotide separations.

12. The method of Claim 1 wherein the separation medium comprises particles selected from the group consisting of silica, silica carbide, silica nitrite, titanium oxide, aluminum oxide, zirconium oxide, carbon, insoluble polysaccharide, and diatomaceous earth, the particles having separation surfaces which are coated with a hydrocarbon or non-polar hydrocarbon substituted polymer, or have substantially all polar groups reacted with a non-polar hydrocarbon or substituted hydrocarbon group, wherein the surfaces are non-polar.

13. The method of Claim 1 wherein the separation medium comprises polymer beads having an average diameter of 0.5 to 100 microns, the beads being unsubstituted polymer beads or polymer beads substituted with a moiety selected from the group consisting of hydrocarbon having from one to 1,000,000 carbons.

14. The method of Claim 13, wherein the separation medium comprises C-18 alkylated nonporous poly(styrene-divinylbenzene) polymer beads.

15. The method of Claim 1, wherein the separation medium comprises a monolith.

16. The method of Claim 1, wherein the separation medium is substantially free of multivalent cations capable of interfering with polynucleotide separations.

17. The method of Claim 1 wherein the separation medium has been prepared using reagents that are substantially free of multivalent cations capable of interfering with polynucleotide separations and under conditions that are substantially free of multivalent cations capable of interfering with polynucleotide separations.

18. The method of Claim 1 wherein the separation medium has been subjected to acid wash treatment to remove any residual surface metal contaminants.

19. The method of Claim 1 wherein the separation medium has been subjected to treatment with a multivalent cation-binding agent.

20. The method of Claim 1 wherein the mobile phase includes an organic solvent selected from the group consisting of alcohol, nitrile, dimethylformamide, tetrahydrofuran, ester, ether, and mixtures of one or more thereof.

21. The method of Claim 20 wherein the mobile phase includes acetonitrile.

22. The method of Claim 1 wherein the mobile phase includes a counterion agent selected from the group consisting of lower alkyl primary amine, lower alkyl secondary amine, lower alkyl tertiary amine, lower trialkylammonium salt, quaternary ammonium salt, and mixtures of one or more thereof.

23. The method of Claim 22 wherein the counterion agent is selected from the group consisting of octylammonium acetate, octadimethylammonium acetate, decylammonium acetate, octadecylammonium acetate, pyridiniumammonium acetate, cyclohexylammonium acetate, diethylammonium acetate, propylethylammonium acetate, propyldiethylammonium acetate, butylethylammonium acetate, methylhexylammonium acetate, tetramethylammonium acetate, tetraethylammonium acetate, tetrapropylammonium acetate, tetrabutylammonium acetate, dimethydiethylammonium acetate, triethylammonium acetate, tripropylammonium acetate, tributylammonium acetate, tetrapropylammonium acetate, tetrabutylammonium acetate,

triethylammonium hexafluoroisopropyl alcohol, and mixtures of one or more thereof.

24. The method of Claim 23 wherein the counterion agent is tetrabutylammonium bromide.

25. The method of Claim 23 wherein the counterion agent is triethylammonium acetate.

26. The method of Claim 1 wherein the RNA molecule is separated from the agent capable of catalyzing RNA degradation by MIPC, wherein mRNA denaturation is achieved by conducting the separation at a temperature sufficient to substantially denature the mRNA molecule, wherein the separation medium comprises polymer beads having an average diameter of 0.5 to 100 microns, and wherein the mobile phase comprises acetonitrile and triethylammonium acetate.

27. The method of Claim 26 wherein the separation is conducted under conditions that are substantially free of multivalent cations capable of interfering with polynucleotide separations.

28. The method of Claim 27, wherein the separation is conducted at a temperature of about 70°C or greater.

29. The method of Claim 28, wherein the separation medium comprises C-18 alkylated nonporous poly(styrene-divinylbenzene) polymer beads.

30. A stabilized RNA molecule prepared by the process recited in Claim 1.

31. A stabilized solution of RNA molecules that is substantially free of RNases.

32. A stabilized solution of RNA molecules that is devoid of RNAse inhibitorsand stable at room temperature.

33. A method for stabilizing an RNA molecule against degradation comprising:

a) applying the RNA molecule to a separation medium having a non-polar separation surface in the presence of a counterion agent;

b) eluting the RNA molecule from the separation medium by passing through the separation medium a mobile phase containing a

concentration of organic solvent sufficient to elute the RNA molecule from the separation medium; and

c) collecting an eluant fraction containing the RNA molecule, wherein the RNA molecule is stabilized against degradation.